

Burden of Cardiovascular Disease in South Dakota

South Dakota Department of Health

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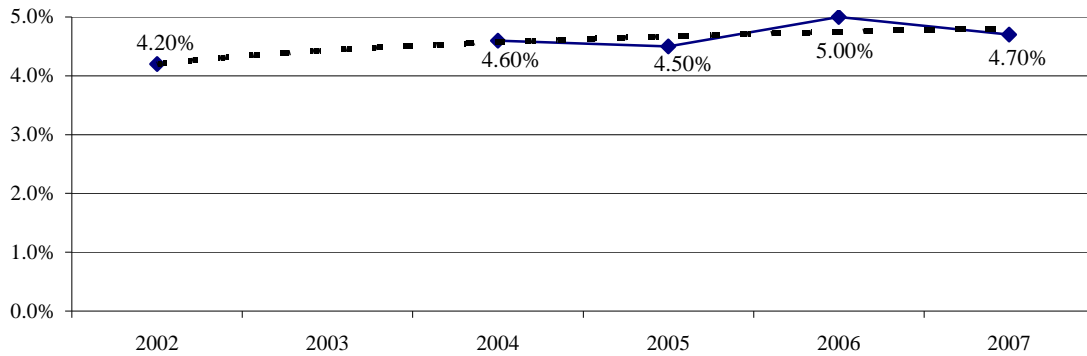
Introduction

Cardiovascular disease is a broad term that includes heart attack, stroke, heart failure, hypertensive heart disease, and diseases of the arteries, veins, and circulatory system. Cardiovascular disease remains the state's number one health issue, as in the nation. It is the leading cause of death for men and women in all race/ethnic groups in South Dakota and in the United States. The impact of cardiovascular disease is felt in many ways. Rising healthcare costs associated with long-term illness and acute treatment affect the economic future of the state. Perhaps the greatest impact is the difficult life changes that occur with heart disease and stroke—an impact that can't be measured by numbers. In the coming years, the number of South Dakotans over the age of 65 will increase dramatically. As our population increases and grows older, we can expect to see heart disease, stroke, and the economic costs associated with treatment and rehabilitation also increase. Never has the need for prevention and treatment of cardiovascular disease been greater.

Burden of Cardiovascular Disease in South Dakota

In South Dakota, heart disease is the leading cause of death, accounting for 1,743 or 24.8% of the state's deaths in 2006. Stroke is the third leading cause of death, accounting for 437 or 6.2% of the state's deaths (South Dakota Vital Statistics Report, 2006). In 2006, South Dakota reached an all time high of 5% of BRFSS respondents indicating that a health professional had told them they had previously had a heart attack or myocardial infarction, while in 2007 it dropped slightly to 4.7% (Figure 1).

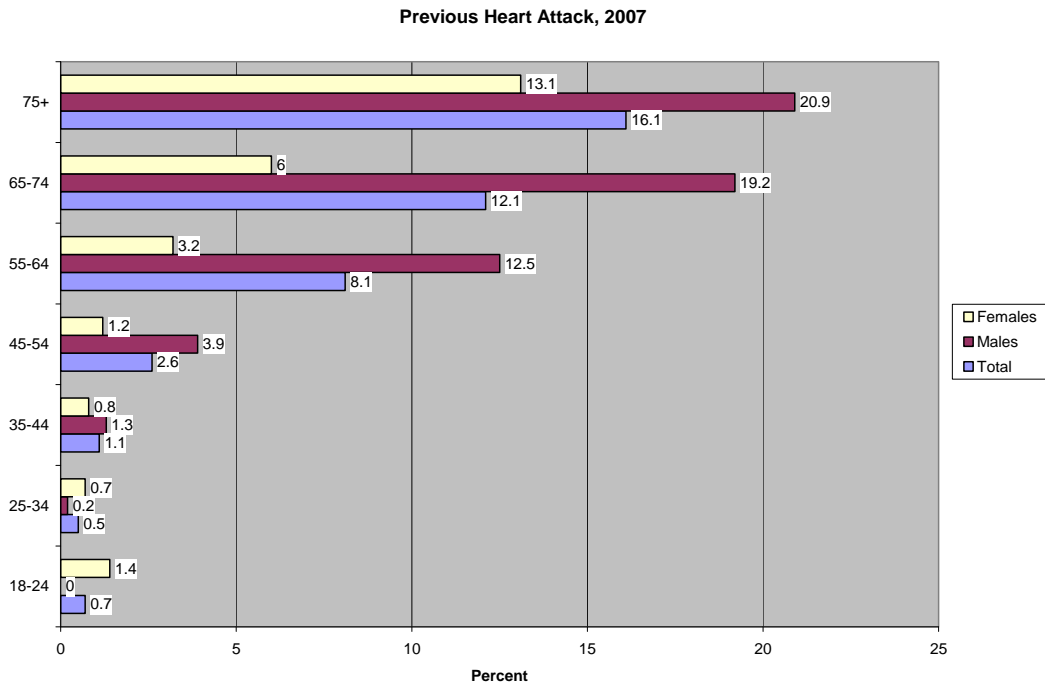
Figure 1
Percent of South Dakota Respondents Who Previously Had a Heart Attack



Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 2002, 2004-2007

A significantly higher prevalence of males have been told they had a heart attack than females (6.1% vs. 3.3%). The prevalence of ever having a heart attack generally increases as age increases with a significant increase occurring as the 55-64 age group is reached. This association is more evident in males (Figure2).

Figure 2
Percent of South Dakota Respondents Who Previously Had a Heart Attack, by Age

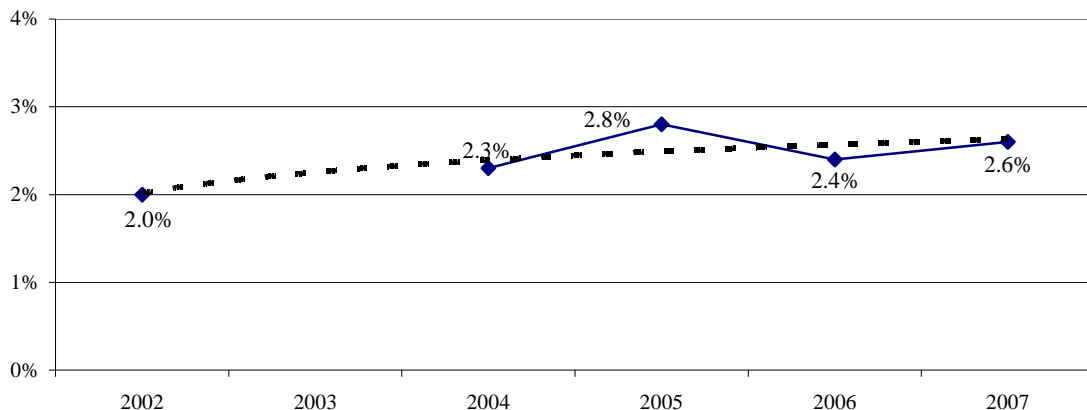


Source: Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 2007

In 2007, 4% of BRFSS respondents indicated a doctor or other health professional told them that they have angina or coronary health disease. South Dakota's health disparities parallel the national picture as well. American Indian women have a higher prevalence of a previous heart attack than white women (9.1% vs. 3%). A further concern is that few women perceive themselves to be at risk of heart disease when, in fact, more women die of heart disease than cancer and other diseases.

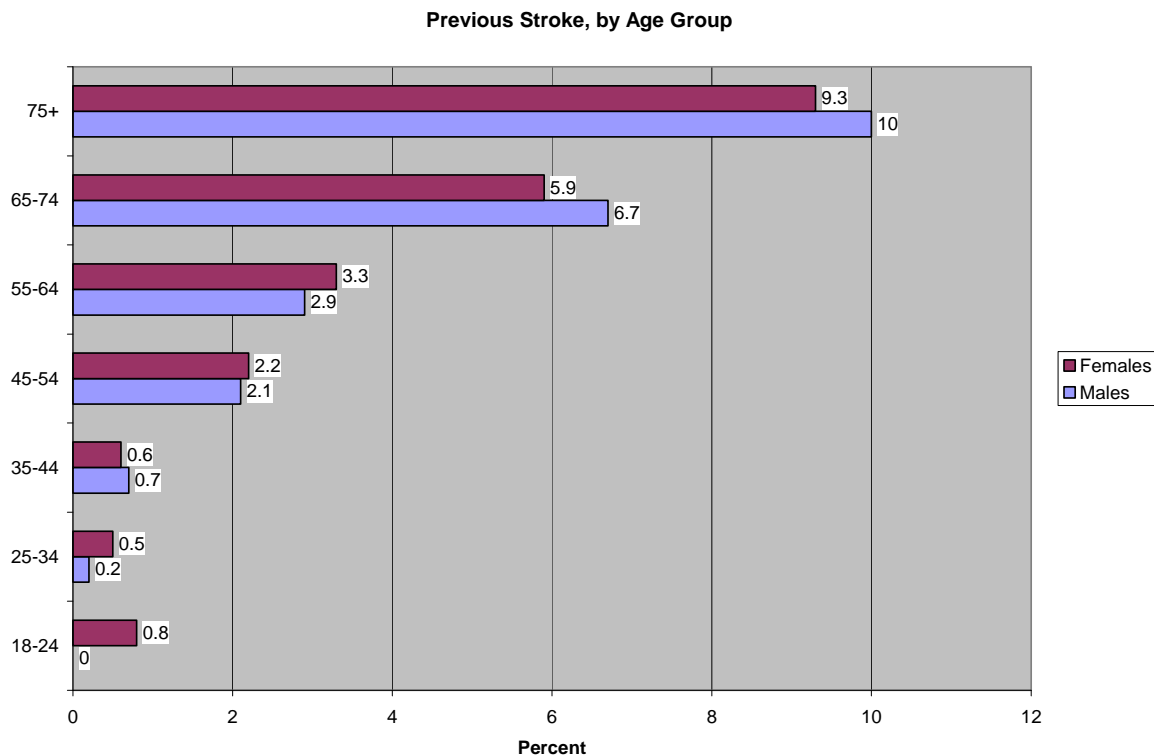
In 2007, 2.6% of BRFSS respondents indicated that a doctor, nurse, or other health professional told them they had a stroke (Figure 3). The prevalence of ever having had a stroke generally increases as age increases. This includes significant increases when the 45-54 and 65-74 age groups are reached. This age association is more evident in males (Figure 4).

Figure 3
Percent of South Dakota Respondents Who Have Previously Had a Stroke



Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 2002, 2004-2007

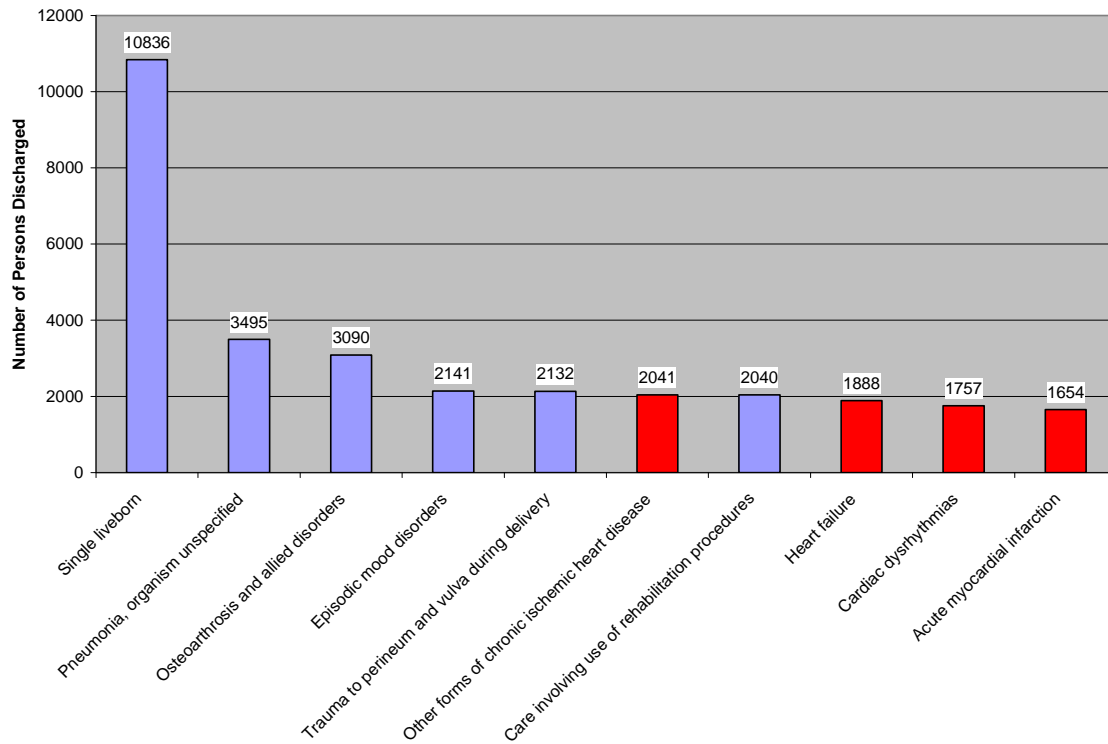
Figure 4
Percent of South Dakota Respondents Who Have Previously Had a Stroke, by Age



Source: The Behavioral Risk Factor Surveillance System, South Dakota
Department of Health, 2007

In 2007, four of the top ten hospital discharges were related to CVD (South Dakota Department of Health, 2007) (Figure 5). These data do not include Veterans Administration (VA) or Indian Health Service (I.H.S). hospitals.

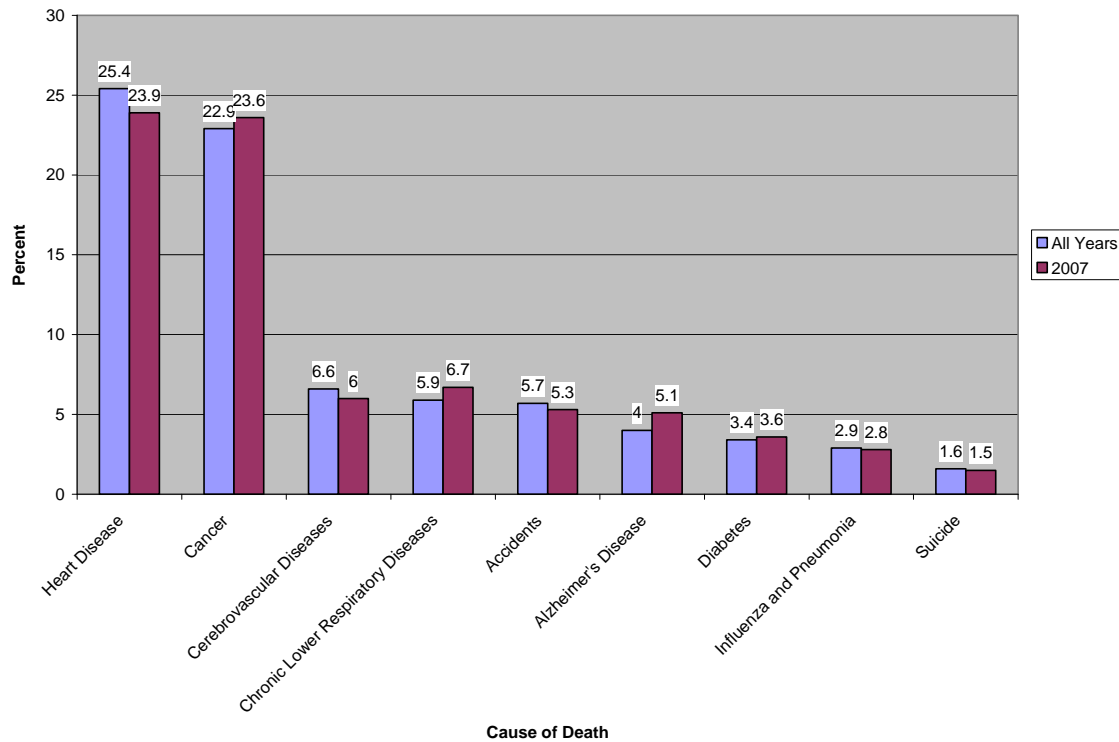
Figure 5
Top Ten Hospital Discharges in South Dakota in 2007



Source: South Dakota Department of Health, 2007

Heart disease is the number one cause of death in South Dakota. In 2007, 23.9% of deaths were related to heart disease. Six percent of all deaths in 2007 were the results of a stroke (Figure 6) (South Dakota Vital Statistics Report, 2007).

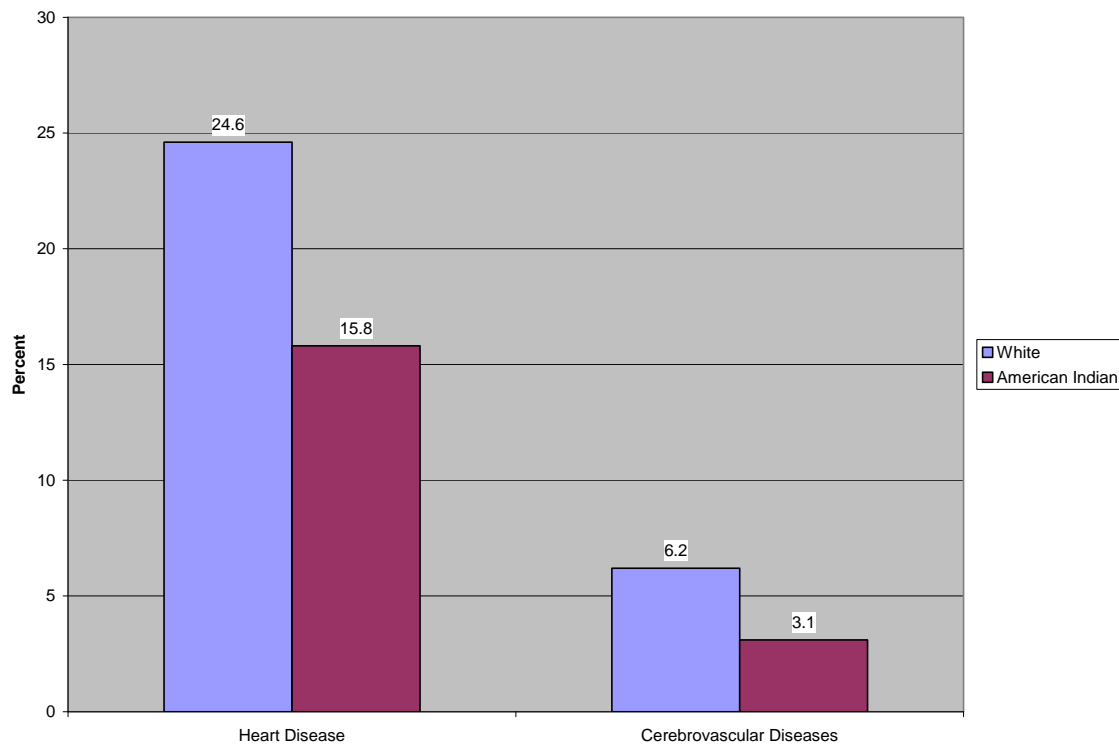
Figure 6
South Dakota Leading Causes of Death



Source: South Dakota Vitals Statistics Report, 2007

In 2007, mortality resulting from CVD is significantly higher among Whites than among the American Indian population (Figure 7).

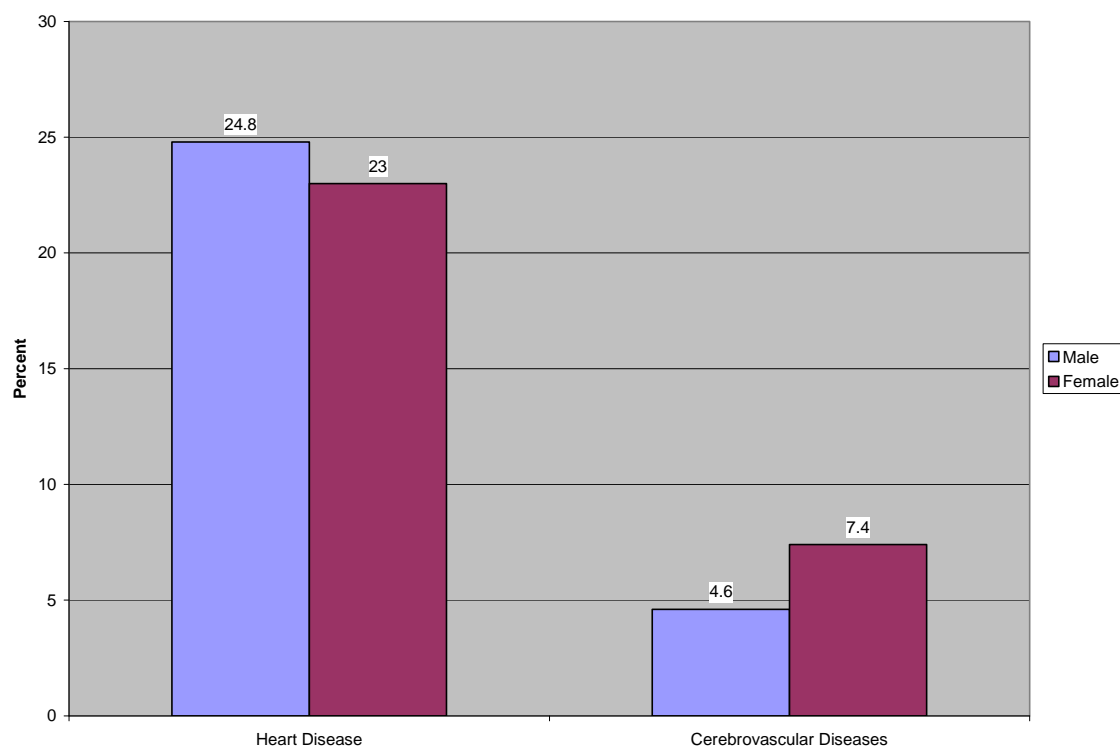
Figure 7
Cardiovascular Disease Mortality by Race, 2007



Source: South Dakota Vitals Statistics Report, 2007

Heart disease was the number one cause of death among men and women in South Dakota in 2007. Deaths resulting from stroke were significantly higher among females in 2007 than males (Figure 8) (South Dakota Vital Statistics Report, 2007).

Figure 8
Cardiovascular Disease Mortality by Gender, 2007

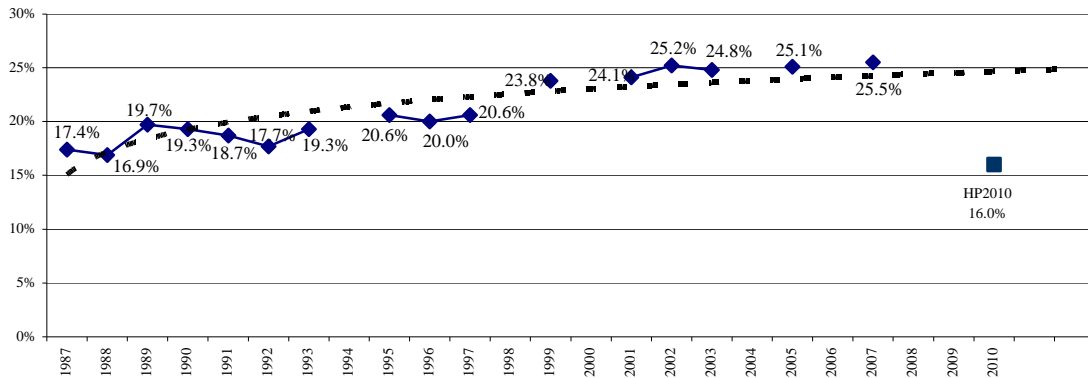


Source: South Dakota Vitals Statistics Report, 2007

Risk Factors for Cardiovascular Disease

The prevalence of hypertension among South Dakotans has been increasing since the late 1980's (Figure 9). In 2007, 25.5% of BRFSS respondents reported having hypertension. South Dakota is slightly below the 2007 national average of 27.8%.

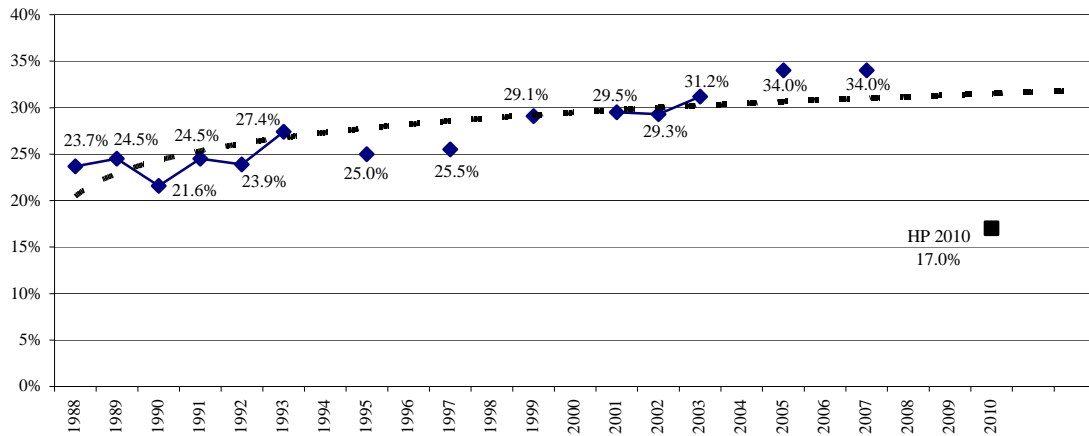
Figure 9
Prevalence of Hypertension Among South Dakota Respondents



Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 1987-1993, 1995-1997, 1999, 2001-2003, 2005, 2007

High blood cholesterol is also a risk factor for CVD. Again, the overall prevalence of high blood cholesterol has been increasing since the late 1980's (Figure 10). In 2007, 34% of South Dakotans reported having high blood cholesterol. South Dakota is slightly below the 2007 national average of 37.6%.

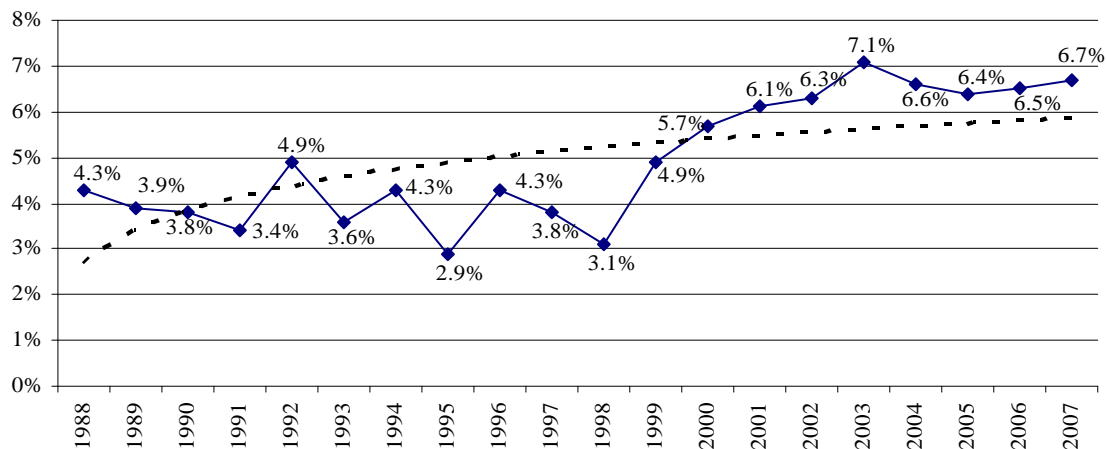
Figure 10
Prevalence of High Blood Cholesterol Among South Dakota Respondents



Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 1987-1993, 1995, 1997, 1999, 2001-2003, 2005, 2007

The prevalence of South Dakotans with diabetes has been increasing since the late 1980's (Figure 11). In 2007, 6.7% of South Dakotans reported having diabetes. South Dakota is below the national average of 8%. American Indians have a significantly higher prevalence of diabetes than whites (11% vs. 6.4%).

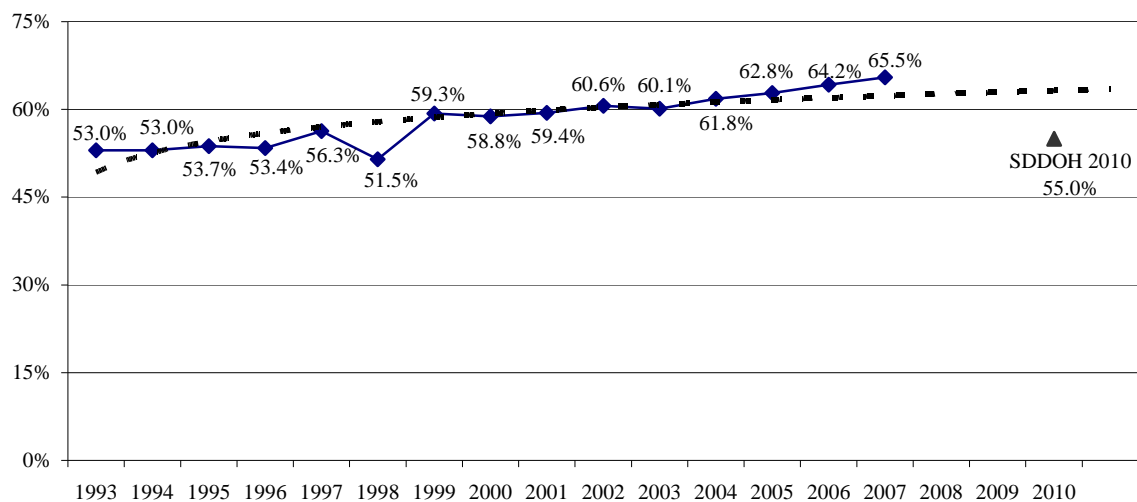
Figure 11
Prevalence of Diabetes Among South Dakota Respondents



Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 1988-2007

South Dakota had made progress in reducing risk factors that lead to cardiovascular disease. The prevalence of cigarette smoking declined significantly from its peak of 27.2% in 1998 to its current low of 19.8% in 2007 (SD BRFSS, 2007), which is equal to the national average of 19.8%. Use of spit tobacco among adult South Dakotans has also declined from 6.8% in 2003 to 5.8% in 2007. While there has been significant progress in decreasing tobacco use, the percentage of South Dakotans that are overweight/obese has increased dramatically over the past decade. In 1994, 53% of South Dakotans were overweight or obese. By 2007, this figure rose to 65.5% (Figure 12). The problem of overweight/obesity is most prevalent among American Indians where 73.5% are overweight or obese. Nationally, 62.9% are overweight or obese.

Figure 12
Prevalence of Overweight/Obesity Among South Dakota Respondents

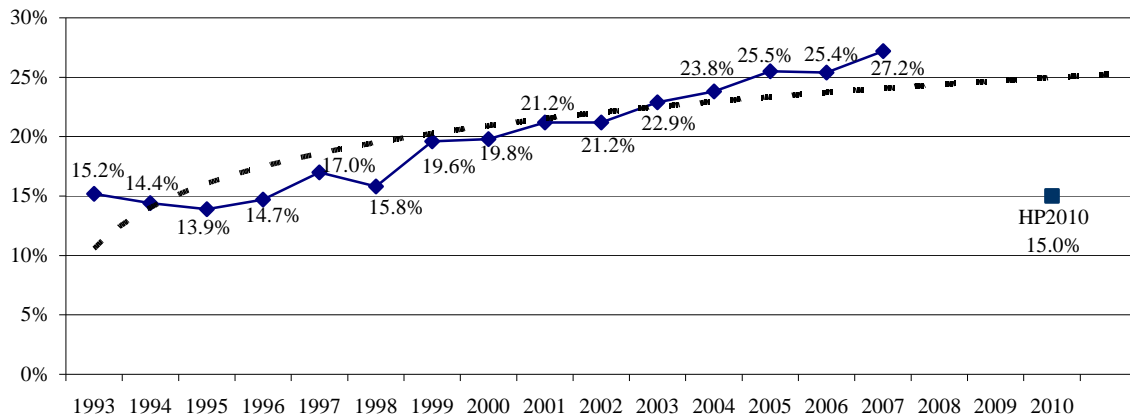


Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 1993-2007

Obesity is defined as respondents who report having a Body Mass Index (BMI) of 30.0 or above. The percentage of South Dakotans classified as obese has been increasing over the past ten years (Figure 13). In 1998, 15.8% of South Dakotans were obese, where

as in 2007, 27.2% are obese. American Indians (38.2%) have a much higher prevalence of obesity than whites (26.5). South Dakota is slightly above the nationwide median of 26.3%.

Figure 13
Percent of South Dakota Respondent Who Are Obese Based on Body Mass Index

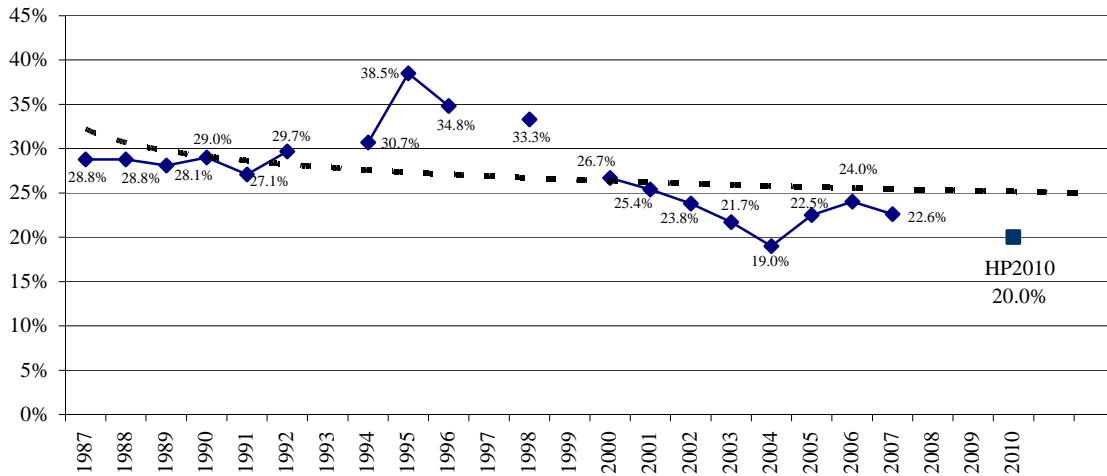


Source: The Behavioral Risk Factor Surveillance System,
South Dakota Department of Health, 1993-2007

Approximately 23% (22.6%) of South Dakotans do not participate in any leisure-time physical activity (Figure 14). South Dakota mirrors the nationwide median of 22.6%.

Figure 14

Percent of South Dakota Respondents Who Reported No Leisure Time Physical Activity

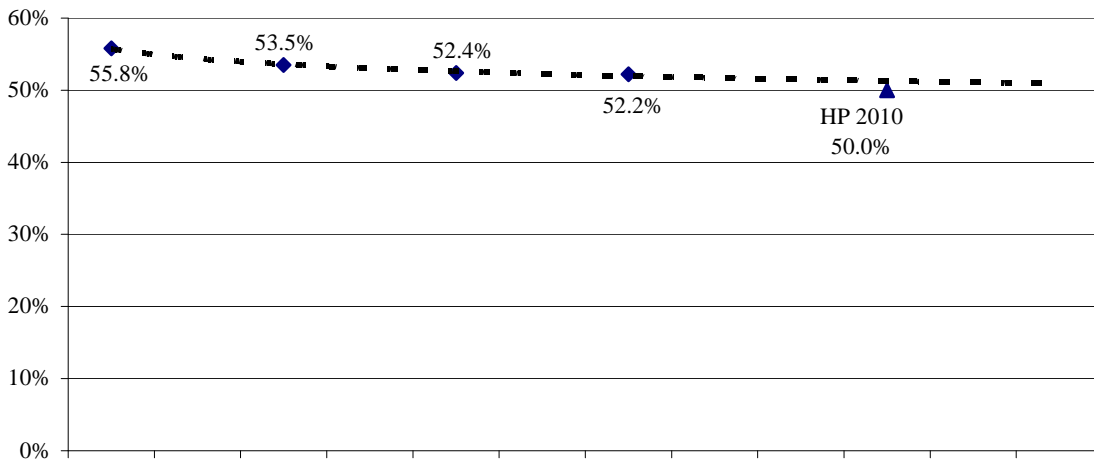


Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 1987-1992, 1994-1996, 1998, and 2000-2007

Over half (52.2%) of South Dakotans report doing less than 30 minutes per day of moderate physical activity or less than five days per week of moderate physical activity (Figure 15). The nationwide median is 50.5%.

Figure 15

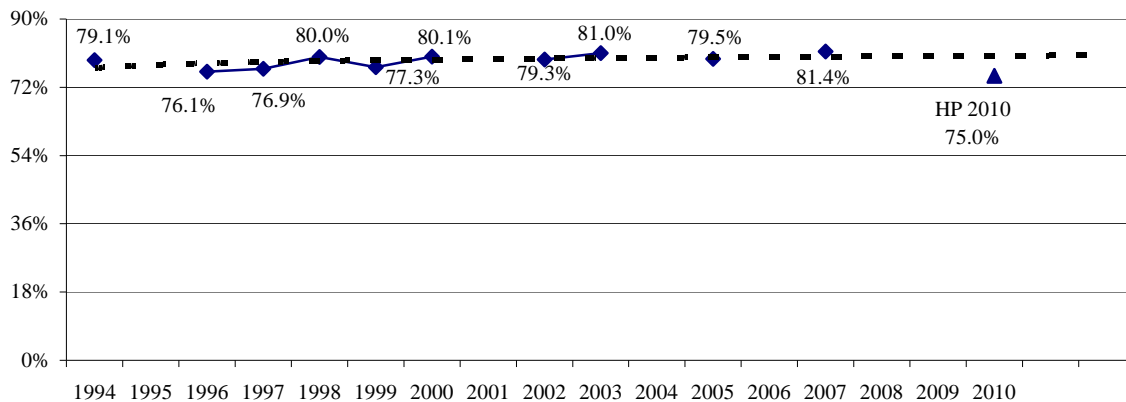
Percent of South Dakota Respondents Who Reported No Moderate Physical Activity



Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 2001, 2003, 2005, and 2007

In 2007, 81.4% of South Dakotans reported consuming less than five servings of fruits and vegetables per day. Nationwide, the rate is somewhat lower at 75.6% (Figure 16). Overall, from 1996 to 2003, the percent of respondents who did not consume at least five servings of fruits and vegetables had been increasing. In 2005, there was a slight decrease; however in 2007 the percentage went back up. Males (84.8%) report not consuming at least five servings of fruits and vegetables than females (78.1%).

Figure 16
Percent of South Dakota Respondents Who Reported Not Consuming at Least Five Servings of Fruits and Vegetables Per Day



Source: The Behavioral Risk Factor Surveillance System, South Dakota Department of Health, 1994, 1996-2000, 2002-2003, 2005 and 2007

Summary

Cardiovascular disease remains the number one killer of South Dakota residents, accounting for 24.8% of all deaths in adults during 2006. Reducing risk factors and increasing awareness of signs and symptoms among all South Dakotans are the primary goals of the CVD State Plan.

References

- South Dakota Department of Health. (2005). Behavioral Risk Factor Surveillance System.
- South Dakota Department of Health. (2007). Behavioral Risk Factor Surveillance System.
- South Dakota Department of Health. (2007). Hospital Discharge Data.
- South Dakota Department of Health. (2007). *South Dakota vital statistics report: A state and county comparison of leading health indicators*. Author.

Glossary

Acute Myocardial Infarction

See Heart Attack for definition.

Angina

Narrowing of the blood vessels to the coronary artery causes temporary discomfort or pain when the heart cannot receive enough blood. Angina usually occurs when the heart is working harder than normal, usually during exercise or a time of stress. This temporary discomfort can be a dull ache, pressure, squeezing or heaviness in the chest. The pain or discomfort sometimes moves down the arms, up the neck and jaw or into the back.

Atherosclerosis

A condition that results from the gradual build-up of fatty substances, including cholesterol, on the walls of the arteries. This build-up, called plaque, reduces the blood flow to the heart, brain and other tissues and can cause a heart attack or stroke. This process is commonly referred to as hardening of the arteries.

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is a random digit-dialed telephone survey of a sample of non-institutionalized adults (age 18 years and older) conducted annually in all 50 states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands, in collaboration with the Centers for Disease Control and Prevention (CDC). The BRFSS survey includes questions on a wide variety of health-related topics,

including diabetes, tobacco and alcohol use, physical activity, diet, weight control, health insurance, and the use of preventive and other health care services. The South Dakota Department of Health is the lead agency for the statewide BRFSS survey.

Body Mass Index (BMI)

A measurement of human body size and proportion defined as the weight in kilograms divided by the square of height in meters.

Blood Cholesterol

Cholesterol is made in the liver and absorbed from food consumption. Cholesterol is used by all parts of the body and is transported around the body in the blood. A high level of blood cholesterol leads to atherosclerosis and an increased risk of heart disease.

Blood Pressure

Blood pressure measures the force with which blood travels through blood vessels. A blood pressure reading comprises two numbers. The higher number is the systolic pressure – which is generated when the heart pumps blood. The lower number measures the pressure when the heart is at rest. Blood pressure numbers typically start to rise when artery walls thicken, constrict, or lose their elasticity, which makes it harder for blood to push through them. When arteries become too narrow, it typically results in high blood pressure.

Cardiovascular Disease (CVD)

The term cardiovascular disease (CVD) refers to a wide range of disorders affecting the heart and blood vessels. A leading cause of CVD is atherosclerosis, a general term for the narrowing and hardening of the arteries. CVD can be sub-divided into the following diseases:

- coronary heart disease (CHD)/coronary artery disease (CAD)

- cerebrovascular disease (CBVD)

- peripheral vascular disease (PVD)

Cerebrovascular Disease (CBVD)

CBVD encompasses stroke, which is injury or death to parts of the brain caused by an extended or permanent interruption in the blood supply to that area, and transient ischemic attacks, which are temporary impairments to vision, speech, sensation or movement caused by a brief interruption in the blood supply to the brain.

Cholesterol

A fatty substance that occurs naturally in the body and is necessary for hormone production, cell metabolism and other vital processes. Cholesterol is also found in many of the processed foods that we eat. High levels of blood cholesterol are a contributing factor to coronary artery disease.

Comorbidity

Two or more diseases or conditions existing together in an individual.

Coronary Artery Disease (CAD)

A condition in which the arteries that service the heart are narrowed by LDL-deposited plaques. When an artery becomes blocked and bloodflow is impeded, the heart muscle is deprived of oxygen. Blocked bloodflow can cause chest pain (also called angina) and/or heart attack. High levels of LDL cholesterol can indicate heart disease.

Coronary Heart Disease (CHD)

See Coronary Artery Disease for definition.

Healthy People 2010 Initiative (HP 2010)

Healthy People 2010 is a set of health objectives for the Nation to achieve over the first decade of the new century. It is used by states, communities, professional organizations, and others to help them develop programs to improve health.

Heart Disease

See Coronary Artery Disease for definition.

Heart Attack

When a part of the heart muscle dies because blood flow is interrupted, a heart attack can occur. Symptoms may include nausea, shortness of breath and pain in the chest, arm or neck. Also called "myocardial infarction."

Hospital Discharge Data

Beginning in 2005, data has been collected from all community hospitals within South Dakota, with the exception of IHS and the VA. Data fields include: age, sex, race, location, length of stay, discharge status, principle/secondary diagnoses, as well as principle/secondary procedures.

Hypercholesterolemia

Medical name for high levels of cholesterol in the blood.

Hypertension

High blood pressure. See Blood Pressure for definition.

Incidence

The rate at which a certain event occurs (i.e., the number of new cases of a specific disease occurring during a certain period).

Myocardial Infarction

See Heart Attack for definition.

Obesity

The condition of having an abnormally high proportion of body fat. Defined as a body mass index (BMI) of greater than or equal to 30. Subjects are generally classified as obese when body fat content exceeds 30 percent in women and 25 percent in men. The operational definition of obesity in this document is a BMI ≥ 30 .

Overweight

An excess of body weight but not necessarily body fat; a body mass index of 25 to 29.9 kg/m².

Peripheral Vascular Disease (PVD)

Peripheral vascular disease (PVD) refers to diseases of the blood vessels (arteries and veins) located outside the heart and brain. While there are many causes of peripheral vascular disease, doctors commonly use the term peripheral vascular disease to refer to peripheral artery disease (peripheral arterial disease, PAD), a condition that develops when the arteries that supply blood to the internal organs, arms, and legs become completely or partially blocked as a result of atherosclerosis.

Prevalence

The number of events, e.g., instances of a given disease or other condition, in a given population at a designated time.

Risk Factor

A risk factor is an attribute which is positively associated with the development of a disease but is not sufficient to cause the disease. The generally accepted risk factors for cardiovascular disease are smoking, high blood pressure, high cholesterol, diabetes, obesity/sedentary lifestyle, alcohol, stress, age and socio-economic status.

South Dakota Vital Statistics Report

The South Dakota Vital Statistics Report compiles state and county data related to natality, infant mortality, mortality, induced abortion, marriage and divorce, communicable disease, health status profiles, and health status maps.

Stroke

Occurs when blood vessels in the brain either become clogged or burst, killing vital tissue. A stroke can result in temporary or permanent disabilities including paralysis and a variety of sensory impairments.